

**What is claimed is:**

1. A hydrocarbon cracking catalyst in which zeolite is fixed in the pores of a metal oxide support.
- 5 2. The hydrocarbon cracking catalyst of claim 1, wherein the zeolite is comprised in 0.1-30 wt% per 100 wt% of the metal oxide support.
- 10 3. The hydrocarbon cracking catalyst of claim 1, which is used to crack C<sub>4</sub>-C<sub>8</sub> paraffinic or olefinic hydrocarbons.
- 15 4. The hydrocarbon cracking catalyst of claim 1, wherein the metal oxide has a shape selected from the group consisting of a sphere, a Raschig ring and a Leschig ring.
5. The hydrocarbon cracking catalyst of claim 1, wherein the metal oxide is selected from the group consisting of  $\alpha$ -alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate and calcium aluminate.
- 20 6. The hydrocarbon cracking catalyst of claim 1, wherein the zeolite has a structure of MFI, MEL, TPN, MTT or FER.

7. The hydrocarbon cracking catalyst of claim 1, wherein the zeolite is a HZSM-5 catalyst or a catalyst in which metal constituents are ion-exchanged or impregnated in HZSM-5.

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8. A method for preparing a hydrocarbon cracking catalyst comprising the steps of:

- a) vacuumizing a container including metal oxide;
- b) adding zeolite powder in water and stirring it to obtain 10 a slurry solution;
- c) spraying the slurry solution of step (b) into the vacuous container to penetrate it into the pores of the metal oxide support; and
- d) drying the catalyst prepared in step (c) and calcining 15 it to fix zeolite powder in the metal oxide support.

9. The method of claim 8, which is applied to C<sub>4</sub>-C<sub>8</sub> paraffinic or olefinic hydrocarbons.

20 10. The method of claim 8, wherein the metal oxide has a shape selected from the group consisting of a sphere, a Raschig ring and a Leschig ring.

11. The method of claim 8, wherein the metal oxide is selected from the group consisting of  $\alpha$ -alumina, silica, silica-alumina, zirconium oxide, magnesium oxide, magnesium aluminate and 5 calcium aluminate.

12. The method of claim 8, wherein the zeolite has a structure of MFI, MEL, TPN, MTT or FER.

10 13. The method of claim 8, wherein the zeolite is a HZSM-5 catalyst or a catalyst in which metal constituents are ion-exchanged or impregnated in HZSM-5.

14. The method of claim 8, wherein the zeolite is comprised 15 in 0.1-30 wt% per 100 wt% of the metal oxide support.